

V SEMESTER

Course Title	TECHNICAL MANAGEMENT & ENTREPRENEURSHIP	Semester	05
Course Code	MVJ20TIM51	CIE	50
Total No. of Contact Hours	40	SEE	50
No. of Contact Hours/week	3 (L : T : P :: 3 : 0 : 0)	Total	100
Credits	3	Exam. Duration	3 Hours

Course objective is to:

- Describe the importance of management and functions of a manager.
- Explain the process of planning and organizing.
- Explain the requirements of direction, supervision and the methods of establishing control.
- Identify the role of entrepreneurs in the economic development of the nation and recognize the barriers of entrepreneurship.
- Explain the importance of Intellectual property protection.

Module-1

L1,L2, L3

Hours 8

Management: importance of management, definition, management functions, roles of a manager, levels of management, managerial skills, management and administration, management –a science or art, management – a profession, professional management v/s family management. Development of management thought; Early classical approaches, Neo classical approaches, modern approaches.

Application: Enterprises

Video Link:<https://www.youtube.com/watch?v=mub7Z8F13ZU>

Module-2

L1,L2, L3

Hours 8

Planning: Nature, Importance of planning, forms, types of plans, steps in planning, limitations of planning, making planning effective, planning skills, strategic planning in Indian industry.

Organizing: Organization Meaning, process of organizing, span of management principles of organizing, Departmentation, organization structure, committees, teams.

Application: Industry

Video Link:<https://www.youtube.com/watch?v=pCUs3UKwYpc>

Module-3

L1,L2, L3

Hours 8

Direction and supervision: Requirements of effective direction, giving orders, motivation, job satisfaction, morale , organizational commitment, first level supervision or front line supervision.

Controlling: Meaning and steps in controlling , Essential of a sound control system , Methods of establishing control

Application: Industry

Video Link: <https://www.youtube.com/watch?v=MufenDklR8E>

Module-4

L1,L2, L3

Hours 8

Entrepreneurship: Meaning of Entrepreneur; Evolution of the Concept, Functions of an Entrepreneur, Types of Entrepreneur, Entrepreneur – an emerging Class. Concept of Entrepreneurship – Evolution of Entrepreneurship, Development of Entrepreneurship, Stages in entrepreneurial process; Role of entrepreneurs in Economic Development; Entrepreneurship in India; Entrepreneurship – its Barriers.

Application: Industry

Video Link:<https://www.youtube.com/watch?v=aozlwC3XwfY>

Module-5

L1,L2, L3

Hours 8

Introduction to IPR, origin and concepts of IPR, Concept of property, Forms of IP protection: Patents, copyrights, trademarks, designs, Trade secrets, Traditional knowledge, Geographical indications. Basic concepts and historical background of patent system and law- National and international scenario (American & European Patent Regimes).

International Treaties/Conventions on IPR: Paris Convention, Berne convention, Madrid agreement, Rome convention, World Intellectual Property Organization (WIPO), World Trade Organization, TRIPS Agreement, Patent Co-operation Treaty

Application: Industry

Video Link: <https://www.youtube.com/watch?v=hHQWCFE0J84>

Practical Experiments:

Case study on Enterprises:

- Case study(Microsoft),
- Case study (Captain G R Gopinath),
- Case study(NR Narayana Murthy& Infosys)

Practical Sessions:

- Idea Generation and Opportunity Recognition
- Strategy and Business Model Analysis
- Formulation of Project

Course Outcomes:

CO1	Describe the importance of management and functions of a manager.
CO2	Explain the process of planning and principles of organizing
CO3	Identify the role of entrepreneurs in the economic development of the nation.
CO4	Compare the different leadership styles.
CO5	Apply the ethical principles related to the intellectual property protection

Text Books:

1	Management and Entrepreneurship , N V R Naidu ,T Krishna Rao 4th reprint.
2	Law relating to Intellectual Property rights , B. L. Wadhera, 5th edition,Universal Law Publishing, 2011

Reference Books:

1	Principles of Management, P C Tripathi, P N Reddy, 5th edition, TataMcGraw Hill, 2012
2	Dynamics of Entrepreneurial Development & Management, Vasant Desai, Himalaya publishing house, 2009

CIE Assessment:

CIE is based on quizzes, tests, assignments/seminars and any other form of evaluation. Generally, there will be:

Three Internal Assessment (IA) tests during the semester (30 marks each), the final IA marks to be awarded will be the average of three tests

- Quizzes/mini tests (4 marks)
- Mini Project / Case Studies (8 Marks)
- Activities/Experimentations related to courses (8 Marks)

SEE Assessment:

- i. Question paper for the SEE consists two parts i.e. Part A and Part B. Part A is compulsory and consists of objective type or short answer type questions of 1 or 2 marks each for total of 20 marks covering the whole syllabus.
- ii. Part B also covers the entire syllabus consisting of five questions having choices and may contain sub-divisions, each carrying 16 marks. Students have to answer five full questions.
- iii. One question must be set from each unit. The duration of examination is 3 hours.

CO-PO/PSO Mapping

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	-	-	-	-	2	2	-	-	-	2	-	-	-
CO2	2	-	-	-	-	2	2	-	-	-	2	-	-	-
CO3	2	-	-	-	-	2	2	-	-	-	2	-	-	2
CO4	2	-	-	-	-	2	-	-	2	-	2	-	-	-
CO5	2	-	-	-	-	2	-	2	-	-	2	-	1	-

High-3, Medium-2, Low-1

Course Title	MACHINE LEARNING USING PYTHON	Semester	05
Course Code	MVJ20AM52	CIE	50
Total No. of Contact Hours	50	SEE	50
No. of Contact Hours/week	4 (L : T : P :: 3 : 2 : 0)	Total	100
Credits	4	Exam. Duration	3 Hours

Course objective is to: *This course will enable students to*

- Define machine learning and problems relevant to machine learning.
- Differentiate supervised, unsupervised and reinforcement learning.
- Apply neural networks, Bayes classifier and k nearest neighbor, for problems appear in machine learning.
- Perform statistical analysis of machine learning techniques.

Module-1	L1,L2, L3	Hours 10
<p>Introduction: Well posed learning problems, Designing a Learning system, Perspective and Issues in Machine Learning.</p> <p>Concept Learning: Concept learning task, Concept learning as search, Find-S algorithm, Version space, Candidate Elimination algorithm, Inductive Bias.</p> <p>Laboratory Sessions/ Experimental learning: To understand purpose, give real time dataset(problem) and ask to students to solve in class room.</p> <p>Video link / Additional online information (related to module if any):</p> <ul style="list-style-type: none"> • https://www.youtube.com/watch?v=rQ3oi9g8aY • https://www.youtube.com/watch?v=h0e2HAPTGF4 		
Module-2	L1,L2, L3	Hours 10
<p>Decision Tree Learning</p> <p>Decision tree representation, Appropriate problems for decision tree learning, Basic decision tree learning algorithm, hypothesis space search in decision tree learning, Inductive bias in decision tree learning, Issues in decision tree learning.</p> <p>Laboratory Sessions/ Experimental learning: Ask students to design a Decision Tree using freely available dataset or problem in classroom.</p> <p>Video link / Additional online information (related to module if any):</p> <ul style="list-style-type: none"> • https://www.youtube.com/watch?v=qDcl-FRnwSU • https://www.youtube.com/watch?v=FuJVLsZYkuE 		
Module-3	L1,L2, L3	Hours 10
<p>Bayesian Learning and Evaluating Hypotheses</p> <p>Bayesian Learning: Introduction, Bayes theorem, Bayes theorem and concept learning, MDL principle, Naive Bayes classifier, Bayesian belief networks, EM algorithm.</p> <p>Evaluating Hypotheses: Estimating hypothesis accuracy, Basics of sampling theorem, General approach for deriving confidence intervals, Difference in error of two hypothesis</p> <p>Laboratory Sessions/ Experimental learning: Ask the students to build Bayes Belief Networks for real time problem in class room.</p> <p>Video link / Additional online information (related to module if any):</p> <ul style="list-style-type: none"> • https://www.youtube.com/watch?v=480a_2jRdK0 • https://www.youtube.com/watch?v=E3l26bTdtXI 		
Module-4	L1,L2, L3	Hours 10
<p>Artificial Neural Networks and Instance based Learning</p> <p>Artificial Neural Networks: Introduction, Neural Network representation, Appropriate problems, Perceptrons, Backpropagation algorithm. Instanced Based Learning:Introduction, k-nearest neighbor learning, locally</p>		

weighted regression.

Laboratory Sessions/ Experimental learning:

Give real time problem and ask students to design an ANN using perceptrons.

Video link:

- <https://www.youtube.com/watch?v=xbYgKoG4x2g&list=PL53BE265CE4A6C056>.
- <https://www.youtube.com/watch?v=BRMS3T11Cdw&list=PL3pGy4HtqwD2a57wl7C17tmfxfk7JWJ9Y>

Module-5

L1,L2,L3

Hours 10

Reinforcement Learning and Deep Learning : Reinforcement Learning: Introduction, Learning Task, Q Learning.

Deep Learning: Introduction to Deep Learning-Reasons to go Deep Learning, Introduction to Convolution Networks ,Restricted Boltzmann Machines, Deep Belief Nets, Recurrent Nets.

Video link:

- https://www.youtube.com/watch?v=TIIDzLZPyhY&list=PLyqSpQzTE6M_FwzHF_Ayf4LSkz_IjMyjD9
- https://www.youtube.com/watch?v=iOh7QUZGyiU&list=PLqYmG7hTraZDNJre23vqCGIVpfZ_K2RZs

Course Outcomes:

CO1	Identify the issues in machine learning and Algorithms for solving it.
CO2	Explain theory of probability and statistics related to machine learning.
CO3	Investigate concept learning, ANN, Bayes classifier, k nearest neighbor, Q, Learning.
CO4	Identify the difference between Machine Learning and Deep Learning and using scenario
CO5	Explain the concepts of Q learning and deep learning

Text Books:

1	Tom M. Mitchell, Machine Learning, India Edition 2013, McGraw Hill Education.
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Reference Books:

1	Trevor Hastie, Robert Tibshirani, Jerome Friedman, h The Elements of Statistical Learning, 2nd edition, springer series in statistics.
2	Ethem Alpaydın, Introduction to machine learning, second edition, MIT press.

CIE Assessment:

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SEE Assessment:

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Part B also covers the entire syllabus consisting of five questions having choices and may contain subdivisions, each carrying 16 marks. Students have to answer five full questions.

One question must be set from each unit. The duration of examination is 3 hours.

CO-PO/PSO Mapping

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	-	-	-	1	-	-	-	-	-	-	2	-	-
CO2	3	3	3	-	-	-	-	-	1	-	1	2	1	-
CO3	2	2	2	1	3	-	-	-	-	-	1	3	-	1
CO4	3	2	3	-	-	-	-	-	-	2	3	2	-	-
CO5	3	2	3	-	-	-	-	-	-	2	3	2	2	-

High-3, Medium-2, Low-1

Course Title	DATA COMMUNICATION & COMPUTER NETWORKS	Semester	05
Course Code	MVJ20AM53 /MVJ20CS53	CIE	50
Total No. of Contact Hours	50	SEE	50
No. of Contact Hours/week	4(L : T : P :: 3: 2 : 0)	Total	100
Credits	4	Exam. Duration	3 Hours

Course objective is to: *This course will enable students*

- Introduce the fundamental concepts and types of computer networks.
- Demonstrate the TCP/IP and OSI models with merits and demerits.
- Understand the difference between all communication protocols.

Module-1

L1,L2, L3

Hours 10

Data Communications: Components – Direction of Data flow – Networks – Components and Categories – Types of Connections – Topologies –Protocols and Standards – ISO / OSI model, Example Networks such as ATM, Frame Relay, ISDN Physical layer: Transmission modes, Multiplexing, Transmission Media, Switching, Circuit Switched Networks, Datagram Networks, Virtual Circuit Networks.

Video link / Additional online information (related to module if any):

- <http://www.nptelvideos.in/2012/11/computer-networks.html>

Module-2	L1,L2, L3	Hours 10
<p>Data link layer: Introduction, Framing, and Error – Detection and Correction – Parity – LRC – CRC Hamming code, Flow and Error Control, Noiseless Channels, Noisy Channels, HDLC, Point to Point Protocols. 111 Medium Access sub layer: ALOHA, CSMA/CD, LAN – Ethernet IEEE 802.3, IEEE 802.5 – IEEE 802.11, Random access, Controlled access, Channelization.</p> <p>Video link / Additional online information (related to module if any):</p> <ul style="list-style-type: none"> • http://www.nptelvideos.in/2012/11/computer-networks.html 		
Module-3	L1,L2, L3	Hours 10
<p>Network layer: Logical Addressing, Internetworking, Tunneling, Address mapping, ICMP, IGMP, Forwarding, Uni-Cast Routing Protocols, Multicast Routing Protocols.</p> <p>Video link / Additional online information (related to module if any):</p> <ul style="list-style-type: none"> • http://www.nptelvideos.in/2012/11/computer-networks.html 		
Module-4	L1,L2, L3	Hours 10
<p>Transport Layer: Process to Process Delivery, UDP and TCP protocols, Data Traffic, Congestion, Congestion Control, QoS, Integrated Services, Differentiated Services, QoS in Switched Networks.</p> <p>Video link: http://www.nptelvideos.in/2012/11/computer-networks.html</p>		
Module-5	L1,L2, L3	Hours 10
<p>Application Layer: Domain name space, DNS in internet, electronic mail, SMTP, FTP, WWW, HTTP, SNMP.</p> <p>Video link: http://www.nptelvideos.in/2012/11/computer-networks.html</p>		
Course Outcomes:		
CO1	Interpret the basics of Computer Networks and Various Protocols.	
CO2	Generalize functionalities and services of each layer of OSI model.	
CO3	Explains the concept of data framing and error control mechanisms	
CO4	Compares Different routing protocols	
CO5	Identify the concepts of network security, Mobile and adhoc networks	
Text Books:		
1	Data Communications and Networking, Behrouz A. Forouzan , Fourth Edition TMH,2006.	
2	Computer Networks, Andrew S Tanenbaum, 4th Edition. Pearson Education, PHI.	

Reference Books:		
1	An Engineering Approach to Computer Networks, S. Keshav, 2 nd Edition, Pearson Education.	
2	Understanding communications and Networks, 3 rd Edition, W.A. Shay, Cengage Learning.	
3	Computer Networking: A Top-Down Approach Featuring the Internet. James F. Kurose & Keith W. Ross, 3 rd Edition, Pearson Education.	
4	Data and Computer Communication, William Stallings, Sixth Edition, Pearson Education, 2000	

CIE Assessment:

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- Quizzes/mini tests (4 marks)
- Mini Project / Case Studies (8 Marks)
- Activities/Experimentations related to courses (8 Marks)

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- i. Question paper for the SEE consists two parts i.e. Part A and Part B. Part A is compulsory and consists of objective type or short answer type questions of 1 or 2 marks each for total of 20 marks covering the whole syllabus.
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- iii. One question must be set from each unit. The duration of examination is 3 hours.

CO-PO/PSO Mapping

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	-	-	-	1	-	-	-	-	-	-	2	-	-
CO2	3	3	3	-	-	-	-	-	1	-	1	2	1	-
CO3	2	2	2	1	3	-	-	-	-	-	1	3	-	1
CO4	3	2	3	-	-	-	-	-	-	2	3	2	-	-
CO5	3	2	3	-	-	-	-	-	-	2	3	2	2	-

High-3, Medium-2, Low-1

Course Title	WEB TECHNOLOGIES	Semester	05
Course Code	MVJ20AM54	CIE	50
Total No. of Contact Hours	40	SEE	50
No. of Contact Hours/week	3 (L : T : P :: 3 : 0 : 0)	Total	100
Credits	3	Exam. Duration	3 Hours

Course objective is to: *This course will enable students to*

- Understand different Internet Technologies.
- Learn java-specific web services architecture
- Understand the SQL and JDBC
- Learn the AJAX and JSON

Module-1	L1,L2, L3	Hours 8
<p>Website Basics, HTML5, CSS 3, Web 2.0: Web Essentials: Clients, Servers and Communication ,The Internet, Basic Internet protocols, World wide web, HTTP Request Message , HTTP Response Message, Web Clients, Web Servers, HTML5 : Tables, Lists, Image, HTML5 control elements , Semantic elements , Drag and Drop, Audio, Video controls, CSS3: Inline, embedded and external style sheets, Rule cascading, Inheritance, Backgrounds, Border Images, Colours, Shadows, Text, Transformations</p> <p>Laboratory Sessions/ Experimental learning:</p> <ol style="list-style-type: none"> 1. Design HTML form for keeping student record. 2. Write a HTML code to generate following output. Create an html page with following specifications <ol style="list-style-type: none"> a. Title should be about my college b. Put the image in the background c. Place your College name at the top of the page in large text followed by address in smaller size d. Add names of courses offered each in a different color, style and typeface e. Add scrolling text with a message of your choice 		

Video link / Additional online information:

- <https://www.youtube.com/watch?v=QEtWL4IWIL4>
- https://www.youtube.com/watch?v=h_RftxdJTzs

Module-2

L1,L2, L3

Hours 8

Client side Programming: An Introduction to java Script, JavaScript DOM Model, Date and Object, Regular Expression, Exception Handling, Validation, Built-in Objects, Event Handling, DHTML with JavaScript, JSON introduction, Syntax, Function Files, Http Request, SQL.

Laboratory Sessions/ Experimental learning:

1. Write a JavaScript to design a simple calculator to perform the following operations: sum, product, difference and quotient.
2. Write a JavaScript code that displays text “TEXT-GROWING” with increasing font size in the interval of 100ms in RED COLOR, when the font size reaches 50pt it displays “TEXT-SHRINKING” in BLUE color. Then the font size decreases to 5pt.

Video link / Additional online information:

- <https://www.youtube.com/watch?v=uDwSnnhl1Ng&list=PLsyebzWxl7qtP8Lo9TReqUMkiOp446cV>
- <https://www.youtube.com/watch?v=zPTY1hKq3SU&list=PLVIQHNRLfIP-ByWEVjCZAj79kJdshKQwu>

Module-3

L1,L2 , L3

Hours 8

Server Side Programming: Java Servlet Architecture, Servlet Life Cycle, Form GET and POST actions, Session handling, Installing and Configuring Apache Tomcat Web Server, Database Connectivity: JDBC perspectives, JDBC Program Example, JSP: Understanding Java server page, JSP Standard Tag Library (JSTL), Creating HTML form using JSP Code.

Laboratory Sessions/ Experimental learning:

1. Assume four users user1, user2, user3 and user4 having the passwords pwd1, pwd2, pwd3 and pwd4 respectively. Write a servlet for doing the following.
 - a. Create a Cookie and add these four user id’s and passwords to this Cookie.
 - b. Read the user id and passwords entered in the Login form and authenticate with the values available in the cookies.
2. Write a JSP which insert the details of the 3 or 4users who register with the web site by using registration form. Authenticate the user when he submits the login form using the user name and password from the database.

Video link / Additional online information:

- https://www.youtube.com/watch?v=7TOmdDJc14s&list=PLsyebzWxl7pUPF2xjjJiG4BKC9x_GY46
- <https://www.youtube.com/watch?v=xve6QEgIR-0&list=PL0zysOfIRCel5BSXoslpfDawe8FyyOSZb>
- <https://www.youtube.com/watch?v=0pzR2FGTEhk>

Module-4

L1,L2, L3

Hours 8

PHP: Introduction to PHP, PHP using PHP, Variables, Program Control, Built-in Functions, Form Validation, Basic command with PHP examples, Connection to server, creating Database, Selecting Database, Listing Database, listing table names Creating a table, Inserting data, deleting data and tables, altering tables.

Laboratory Sessions/ Experimental learning:

1. Write a PHP program to keep track of the number of visitors visiting the web page and to display this count of visitors, with proper headings.
2. Write a PHP program to display a digital clock which displays the current time of the server.
3. Write a PHP program to sort the student records which are stored in the database using selection sort.
4. Design an XML document to store information about a student in an engineering college affiliated to VTU. The information must include USN, Name, and Name of the College, Branch, Year of Joining, and email id. Make up sample data for 3 students. Create a CSS style sheet and use it to display the document.

Video link / Additional online information :

- <https://www.youtube.com/watch?v=itRkLa2kq6w>
- <https://www.youtube.com/watch?v=KJHYdkKtafU>
- https://www.youtube.com/watch?v=G_CFRAdbXfI&list=PL_RGaFnxSHWrjK2zD4TWKWMWVfeYK-b

Module-5	L1,L2, L3	Hours 8
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AJAX: Ajax client server architecture, Xml HTTP request object, Call back methods. Advanced JavaScript and jQuery, JavaScript Pseudo-Classes, jQuery Foundations, Web Services: Introduction, Java web services Basics, Creating, Publishing, Testing and Describing a web services, Database driven web service from an application.

Laboratory Sessions/ Experimental learning:

1. Creating simple application to access data base using JDBC Formatting HTML with CSS.
2. Write a Program for manipulating Databases and SQL with real time application.
3. Write a Java applet to display the Application Program screen i.e. calculator and other.

Video link / Additional online information

- <https://www.youtube.com/watch?v=qk9MWbyRlhE>
- <https://www.youtube.com/watch?v=0pzR2FGTEhk>
- <https://www.youtube.com/watch?v=HgvIox6ehkM>

Course Outcomes:

CO1	Construct a basic website using HTML and Cascading Style Sheets.
CO2	Build dynamic web page with validation using Java Script objects and by applying different event handling mechanism.
CO3	Develop server side programs using Servlets and JSP.
CO4	Construct simple web pages in PHP and to represent data in XML format.
CO5	Use AJAX and web services to develop interactive web applications.

Text Books:

1	Deitel and Deitel and Nieto, Internet and World Wide Web, How to Program, Prentice Hall, 5th Edition, 2011.
2	Randy Connolly, Ricardo Hoar, "Fundamentals of Web Development", 1st Edition, Pearson Education India. (ISBN:978-9332575271)

Reference Books:

1	Stephen Wynkoop and John Burke —Running a Perfect Website, QUE, 2nd Edition, 1999
2	Chris Bates, Web Programming – Building Intranet Applications, 3rd Edition, Wiley Publications, 2009.
3	Uttam K. Roy, —Web Technologies, Oxford University Press, 2011.

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CO3	3	3	1	-	-	-	-	-	-	-	-	1	1	2
CO4	3	3	1	-	-	-	-	-	-	-	-	1	-	2
CO5	3	3	1	-	-	-	-	-	-	-	-	2	1	1

High-3, Medium-2, Low-1

Course Title	COMPILER DESIGN	Semester	05
Course Code	MVJ20AM551	CIE	50
Total No. of Contact Hours	40	SEE	50
No. of Contact Hours/week	4 (L : T : P :: 3 : 0 : 0)	Total	100

Credits	3	Exam. Duration	3 Hours
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Course objective is to: *This course will enable students*

- Learn the various parsing techniques and different levels of translation.
- Learn how to obtain specific object code from source language.
- Learn how to optimize the code and schedule for optimal performance.

Module-1

L1,L2,L3,L4

Hours 8

FRONT END OF COMPILERS: The Structure of Compiler – Lexical Analysis: Role of Lexical Analyzer, Specification and Recognition of Tokens, Syntax Analysis: Top Down Parsing, Bottom up Parsing, LR Parsers: SLR, CLR, and LALR.

Video Links : https://www.youtube.com/watch?v=yxnbvS2t_QA

Module-2

L1,L2,L3,L4

Hours 8

INTERMEDIATE CODE GENERATION: Syntax Directed Definitions, Evaluation Orders for Syntax Directed Definitions, Syntax Directed Translation Schemes, Intermediate Languages: Syntax Tree, Three Address Code, Postfix Code, Declarations, Translation of Expressions, Type Checking, Back Patching.

Video Links: <https://www.youtube.com/watch?v=EpAzj7zXrbk>

Module-3

L1,L2,L3,L4

Hours 8

RUNTIME AND OBJECT CODE GENERATION: Storage Organization, Stack Allocation Space, Access to Non-local Data on the Stack, Heap Management - Issues in Code Generation - Design of Code Generator - Register Allocation and Assignment – Instruction Selection by Tree Rewriting – Optimal Code Generation for Expressions – Dynamic Programming Code Generation.

Video Links: <https://www.youtube.com/watch?v=IRvaRhPsqOo>

Module-4

L1,L2,L3,L4

Hours 8

CODE OPTIMIZATION: Basic Blocks and Flow Graphs – Optimization of Basic Blocks – Principal Sources of Optimizations – Data Flow Analysis – Constant Propagation – Partial Redundancy Elimination – Peephole Optimizations.

Video Links: <https://nptel.ac.in/courses/106/108/106108113/>

Module-5

L1,L2,L3,L4

Hours 8

SCHEDULING AND OPTIMIZING FOR PARALLELISM: Code Scheduling Constraints – Basic Block Scheduling – Global Code Scheduling - Basic Concepts in Parallelization – Parallelizing Matrix Multiplication – Iteration Spaces – Affine Array Indexes.

Video Links: <https://www.youtube.com/watch?v=-yMWgtTeQgY>

Course outcomes:

CO1	Design compiler phases from language specification.
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CO2	Design code generators for the specified machine.
CO3	Analyze Object Code Generation techniques.
CO4	Apply the various optimization techniques.
CO5	Understand the Optimizing for Parallelism

Text Books:

1	Alfred V. Aho, Monica S. Lam, Ravi Sethi, Jeffrey D. Ullman, —Compilers: Principles, Techniques and Tools ^{ll} , Second Edition, Pearson Education, 2009.
2	Randy Allen, Ken Kennedy, —Optimizing Compilers for Modern Architectures: A Dependence based Approach ^{ll} , Morgan Kaufmann Publishers, 2002.

Reference Books:

1	Keith D Cooper and Linda Torczon, —Engineering a Compiler ^{ll} , Morgan Kaufmann Publishers Elsevier Science, 2004
2	V. Raghavan, —Principles of Compiler Design ^{ll} , Tata McGraw Hill Education Publishers, 2010.
3	Allen I. Holub, —Compiler Design in C ^{ll} , Prentice-Hall Software Series, 1993.
4	Steven S. Muchnick, —Advanced Compiler Design and Implementation ^{ll} , Morgan Kaufmann Publishers - Elsevier Science, India, Indian Reprint 2003.

CIE Assessment:

CIE is based on quizzes, tests, assignments/seminars and any other form of evaluation. Generally, there will be: Three Internal Assessment (IA) tests during the semester (30 marks each), the final IA marks to be awarded will be the average of three tests

- Quizzes/mini tests (4 marks)
- Mini Project / Case Studies (8 Marks)
- Activities/Experimentations related to courses (8 Marks)

SEE Assessment:

- i. Question paper for the SEE consists two parts i.e. Part A and Part B. Part A is compulsory and consists of objective type or short answer type questions of 1 or 2 marks each for total of 20 marks covering the whole syllabus.

- ii. Part B also covers the entire syllabus consisting of five questions having choices and may contain sub-divisions, each carrying 16 marks. Students have to answer five full questions.
- iii. One question must be set from each unit. The duration of examination is 3 hours.

CO-PO/PSO Mapping														
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	3	1	2	-	-	-	-	-	-	-	2	1	-
CO2	3	3	2	3	1	-	-	-	-	-	-	2	2	2
CO3	3	3	2	3	1	-	-	-	-	-	-	2	3	-
CO4	3	3	2	3	2	-	-	-	-	-	-	2	3	-
CO5	3	3	2	3	2	-	-	-	-	-	-	2	3	1

High-3, Medium-2, Low-1

Course Title	COMPUTER GRAPHICS & MULTIMEDIA	Semester	05
Course Code	MVJ20AM552	CIE	50
Total No. of Contact Hours	40	SEE	50
No. of Contact Hours/week	4 (L : T : P :: 3 : 0 : 0)	Total	100
Credits	3	Exam. Duration	3 Hours

Course objective is to: *This course will enable students*

- Develop an understanding and awareness how issues such as content, information architecture, motion, sound, design, and technology merge to form effective and compelling interactive

experiences for a wide range of audiences and end users.

- Become familiar with various software programs used in the creation and implementation of multi-media.
- Appreciate the importance of technical ability and creativity within design practice.
- Gain knowledge about graphics hardware devices and software used.
- Understand the two-dimensional graphics and their transformations.
- Understand the three-dimensional graphics and their transformations.
- Appreciate illumination and color models.
- Become familiar with understand clipping techniques.
- Become familiar with Blender Graphics.

Module-1

L1, L2, L3,L4

Hours 8

ILLUMINATION AND COLOR MODELS: Light sources - basic illumination models – halftone patterns and dithering techniques; Properties of light - Standard primaries and chromaticity diagram; Intuitive colour concepts - RGB colour model - YIQ colour model - CMY colour model - HSV colour model - HLS colour model; Colour selection. Output primitives – points and lines, line drawing algorithms, loading the frame buffer, line function; circle and ellipse generating algorithms; Pixel addressing and object geometry, filled area primitives.

Video Links : <https://www.youtube.com/watch?v=ne5RVVQMVpk>

Module-2

L1,L2,L3,L4

Hours 8

TWO-DIMENSIONAL GRAPHICS: Two dimensional geometric transformations – Matrix representations and homogeneous coordinates, composite transformations; Two dimensional viewing – viewing pipeline, viewing coordinate reference frame; window-to-viewport coordinate transformation, Two dimensional viewing functions; clipping operations – point, line, and polygon clipping algorithms.

Video Links: <https://www.youtube.com/watch?v=iWxS2zpaRjk>

Module-3

L1,L2,L3,L4

Hours 8

THREE - DIMENSIONAL GRAPHICS: Three dimensional concepts; Three dimensional object representations – Polygon surfaces- Polygon tables- Plane equations - Polygon meshes; Curved Lines and surfaces, Quadratic surfaces; Blobby objects; Spline representations – Bezier curves and surfaces -B-Spline curves and surfaces. **TRANSFORMATION AND VIEWING:** Three dimensional geometric and modeling transformations – Translation, Rotation, Scaling, composite transformations; Three dimensional viewing – viewing pipeline, viewing coordinates, Projections, Clipping; Visible surface detection methods.

Video Links: https://www.youtube.com/watch?v=_eVRNdGsLWc

Module-4

L1,L2,L3,L4

Hours 8

MULTIMEDIA SYSTEM DESIGN & MULTIMEDIA FILE HANDLING: Multimedia basics – Multimedia applications – Multimedia system architecture – Evolving technologies for multimedia – Defining objects for multimedia systems – Multimedia data interface standards – Multimedia databases.

Compression and decompression – Data and file format standards – Multimedia I/O technologies – Digital voice and audio – Video image and animation – Full motion video – Storage and retrieval technologies.

Video Links: <https://www.youtube.com/watch?v=davcYvCJ63w>

Module-5

L1,L2,L3,L4

Hours 8

HYPERMEDIA : Multimedia authoring and user interface - Hypermedia messaging -Mobile messaging – Hypermedia message component – Creating hypermedia message – Integrated multimedia message standards – Integrated document management – Distributed multimedia systems.CASE STUDY: BLENDER GRAPHICS Blender Fundamentals – Drawing Basic Shapes – Modelling – Shading & Textures.

Video Links: https://www.youtube.com/watch?v=fAJzLuce_ms

Course outcomes:

CO1 Design and Apply two, three dimensional graphics and transformations.

CO2 Apply Illumination and color models

CO3 Apply clipping techniques to graphics

CO4 Understand Different types of Multimedia File Format

CO5 Design Basic 3d Scenes using Blender

Text Books:

1 Donald Hearn and Pauline Baker M, —Computer Graphics", Prentice Hall, New Delhi, 2007. [Unit I,II,III]

2 Andleigh, P. K and Kiran Thakrar, —Multimedia Systems and Design, PHI, 2003. [UNIT IV,V]

Reference Books:

1 Judith Jeffcoate, —Multimedia in practice: Technology and Applications, PHI, 1998.

2 Foley, Vandam, Feiner and Hughes, —Computer Graphics: Principles and Practice, 2nd Edition, Pearson Education, 2003.

3 Jeffrey McConnell, —Computer Graphics: Theory into Practice, Jones and Bartlett Publishers,2006.

4 Hill F S Jr., "Computer Graphics", Maxwell Macmillan , 1990.

5 Peter Shirley, Michael Ashikhmin, Michael Gleicher, Stephen R Marschner, Erik Reinhard, KelvinSung, and AK Peters, —Fundamentals of Computer Graphics, CRC Press, 2010.

6 William M. Newman and Robert F.Sproull, —Principles of Interactive Computer Graphics, Mc

Graw Hill 1978. <https://www.blender.org/support/tutorials/>

CIE Assessment:

CIE is based on quizzes, tests, assignments/seminars and any other form of evaluation. Generally, there will be: Three Internal Assessment (IA) tests during the semester (30 marks each), the final IA marks to be awarded will be the average of three tests

- Quizzes/mini tests (4 marks)
- Mini Project / Case Studies (8 Marks)
- Activities/Experimentations related to courses (8 Marks)

SEE Assessment:

- i. Question paper for the SEE consists two parts i.e. Part A and Part B. Part A is compulsory and consists of objective type or short answer type questions of 1 or 2 marks each for total of 20 marks covering the whole syllabus.
- ii. Part B also covers the entire syllabus consisting of five questions having choices and may contain sub-divisions, each carrying 16 marks. Students have to answer five full questions.
- iii. One question must be set from each unit. The duration of examination is 3 hours.

CO-PO/PSO Mapping

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	3	1	2	-	-	-	-	-	-	-	2	1	-
CO2	3	3	2	3	1	-	-	-	-	-	-	2	2	2
CO3	3	3	2	3	1	-	-	-	-	-	-	2	3	-
CO4	3	3	2	3	2	-	-	-	-	-	-	2	3	-
CO5	3	3	2	3	2	-	-	-	-	-	-	2	3	1

High-3, Medium-2, Low-1

Course Title	VIRTUAL REALITY	Semester	05
Course Code	MVJ20AM553	CIE	50
Total No. of Contact Hours	40	SEE	50
No. of Contact Hours/week	4 (L : T : P :: 3 : 0 : 0)	Total	100
Credits	3	Exam. Duration	3 Hours

Course objective is to: *This course will enable students*

- Explain understanding of this technology, underlying principles, its potential and limits and to learn about the criteria for defining useful applications.
- Illustrate process of creating virtual environments.

Module-1	L1, L2, L3,L4	Hours 8
Introduction : The three I's of virtual reality, commercial VR technology and the five classic components of a VR system. Input Devices : (Trackers, Navigation, and Gesture Interfaces): Three dimensional position trackers, navigation and manipulation, interfaces and gesture interfaces Video Links : https://www.youtube.com/watch?v=DCQYBHz7RDs		
Module-2	L1,L2,L3,L4	Hours 8
Output Devices: Graphics displays, sound displays & haptic feedback. Video Links: https://www.youtube.com/watch?v=wwcd0h5d0Vs		
Module-3	L1,L2,L3,L4	Hours 8
Modeling : Geometric modeling, kinematics modeling, physical modeling, behaviour modeling, model		

management.

Video Links: <https://www.youtube.com/watch?v=0IgOapAtauM>

Module-4

L1,L2,L3,L4

Hours 8

Human Factors: Methodology and terminology, user performance studies, VR health and safety issues.

Video Links: https://www.youtube.com/watch?v=_RU-XjaKWbg

Module-5

L1,L2,L3,L4

Hours 8

Applications: Medical applications, military applications, robotics applications.

Video Links:

https://www.youtube.com/watch?v=rYWJdZ5qg6M&list=PLbRMhDVUMngcdUbBySzyzcPiFTYWr4rV_

Course outcomes:

CO1	Illustrate technology, underlying principles, its potential and limits and to learn about the criteria for defining useful applications.
CO2	Explain process of creating virtual environments
CO3	Analyse & Design a system or process to meet given specifications with realistic engineering constraints.
CO4	Identify problem statements and function as a member of an engineering design team.
CO5	Utilize technical resources

Text Books:

1	Virtual Reality Technology, Second Edition, Gregory C. Burdea & Philippe Coiffet, John Wiley & Sons.
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Reference Books:

1	Jason Jerald. 2015. The VR Book: Human-Centred Design for Virtual Reality. Association for Computing Machinery and Morgan & Claypool, New York, NY, USA.
2	Learning Virtual Reality: Developing Immersive Experiences and Applications for Desktop, Web, and Mobile, Tony Parisi, O'Reilly Media; 1 edition, 2015.

CIE Assessment:

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- Quizzes/mini tests (4 marks)
- Mini Project / Case Studies (8 Marks)
- Activities/Experimentations related to courses (8 Marks)

SEE Assessment:

- i. Question paper for the SEE consists two parts i.e. Part A and Part B. Part A is compulsory and consists of objective type or short answer type questions of 1 or 2 marks each for total of 20 marks covering the whole syllabus.
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- iii. One question must be set from each unit. The duration of examination is 3 hours.

CO-PO/PSO Mapping

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
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CO2	3	3	2	3	1	-	-	-	-	-	-	2	2	2
CO3	3	3	2	3	1	-	-	-	-	-	-	2	3	-
CO4	3	3	2	3	2	-	-	-	-	-	-	2	3	-
CO5	3	3	2	3	2	-	-	-	-	-	-	2	3	1

High-3, Medium-2, Low-1

Course Title	SOFTWARE TESTING METHODOLOGIES	Semester	05
Course Code	MVJ20AM554	CIE	50
Total No. of Contact Hours	40	SEE	50
No. of Contact Hours/week	4 (L : T : P :: 3 : 0 : 0)	Total	100
Credits	3	Exam. Duration	3 Hours

Course objective is to: *This course will enable students*

- To provide knowledge of the concepts in software testing such as testing process, criteria, strategies, and methodologies.
- To develop skills in software test automation and management using latest tools.

Module-1

L1, L2, L3, L4

Hours 8

Introduction: Purpose of testing, Dichotomies, model for testing, consequences of bugs, taxonomy of bugs
Flow graphs and Path testing: Basics concepts of path testing, predicates, path predicates and achievable paths, path sensitizing, path instrumentation, application of path testing.

Video Links : <https://www.youtube.com/watch?v=KMj49syT8JM&list=PLyqSpQzTE6M-sBjDcT21Gpnj8grR2fDgc>

Module-2

L1, L2, L3, L4

Hours 8

Transaction Flow Testing: transaction flows, transaction flow testing techniques. Data flow testing: Basics of data flow testing, strategies in data flow testing, application of data flow testing. Domain Testing: domains and paths, Nice & ugly domains, domain testing, domains and interfaces testing, domain and interface testing, domains and testability.

Video Links: <https://nptel.ac.in/courses/106/101/106101163/>

Module-3

L1, L2, L3, L4

Hours 8

Paths, Path products and Regular expressions: path products & path expression, reduction procedure, applications, regular expressions & flow anomaly detection. Logic Based Testing: overview, decision tables,

path expressions, KV Charts, specifications

Video Links: <https://nptel.ac.in/courses/106/101/106101163/>

Module-4

L1,L2,L3,L4

Hours 8

State, State Graphs and Transition testing: state graphs, good & bad state graphs, state testing, Testability tips.

Video Links: <https://nptel.ac.in/courses/106/101/106101163/>

Module-5

L1,L2,L3,L4

Hours 8

Graph Matrices and Application: Motivational overview, matrix of graph, relations, power of a matrix, node reduction algorithm, building tools. (Student should be given an exposure to a tool like JMeter or Win-runner).

Video Links: <https://nptel.ac.in/courses/106/101/106101163/>

Course outcomes:

CO1	List a range of different software testing techniques and strategies and be able to apply specific(automated) unit testing method to the projects.
CO2	Distinguish characteristics of structural testing methods.
CO3	Demonstrate the integration testing which aims to uncover interaction and compatibility problems as early as possible.
CO4	Discuss about the functional and system testing methods.
CO5	Demonstrate various issues for object oriented testing.

Text Books:

1	Software Testing techniques - Baris Beizer, Dreamtech, second edition
2	Software Testing Tools – Dr. K. V. K. K. Prasad, Dreamtech.

Reference Books:

1	The craft of software testing - Brian Marick, Pearson Education.
2	Software Testing Techniques – SPD(Oreille)
3	Software Testing in the Real World – Edward Kit, Pearson.
4	Effective methods of Software Testing, Perry, John Wiley
5	Art of Software Testing – Meyers, John Wiley.

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CO-PO/PSO Mapping

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CO2	3	3	2	3	1	-	-	-	-	-	-	2	2	2
CO3	3	3	2	3	1	-	-	-	-	-	-	2	3	-
CO4	3	3	2	3	2	-	-	-	-	-	-	2	3	-
CO5	3	3	2	3	2	-	-	-	-	-	-	2	3	1

High-3, Medium-2, Low-1

Course Title	MACHINE LEARNING USING PYTHON LABORATORY	Semester	05
Course Code	MVJ20AML56	CIE	50
Total No. of Contact Hours	30	SEE	50
No. of Contact Hours/week	3(L : T : P :: 0 : 2 : 2)	Total	100
Credits	2	Exam. Duration	3 Hours

Course objective is to: *This course will enable students to*

- Make use of Data sets in implementing the machine learning algorithms
- Implement the machine learning concepts and algorithms in any suitable language of choice.

S No	Experiment Name	RBT Level	Hours
1	Implement and demonstrate the FIND-S algorithm for finding the most specific hypothesis based on a given set of training data samples. Read the training data from a .CSV file.	L3	3
2	For a given set of training data examples stored in a .CSV file, implement and demonstrate the Candidate-Elimination algorithm to output a description of the set of all hypotheses consistent with the training examples.	L3	3
3	Develop a program to demonstrate the prediction of values of a given dataset using Linear regression .	L3	3
4	Write a program to demonstrate the working of the decision tree based ID3 algorithm . Use an appropriate data set for building the decision tree and apply this knowledge to classify a new sample.	L3	3
5	Build an Artificial Neural Network by implementing the Backpropagation algorithm and test the same using appropriate data sets.	L3	3
6	Write a program to implement the naïve Bayesian classifier for a sample training data set stored as a .CSV file. Compute the accuracy of the classifier, considering few test data sets.	L3	3
7	Assuming a set of documents that need to be classified, use the naïve Bayesian Classifier model to perform this task. Built-in Java classes/API can be used to write the program. Calculate the accuracy, precision, and	L3	3

	recall for your data set.		
8	Write a program to construct a Bayesian network considering medical data. Use this model to demonstrate the diagnosis of heart patients using standard Heart Disease Data Set. You can use Java/Python ML library classes/API.	L3	3
9	Apply EM algorithm to cluster a set of data stored in a .CSV file. Use the same dataset for clustering using k-Means algorithm . Compare the results of these two algorithms and comment on the quality of clustering. You can add Java/Python ML library classes/API in the program.	L3	3
10	Write a program to implement k-Nearest Neighbour algorithm to classify the iris data set. Print both correct and wrong predictions. Java/Python ML library classes can be used for this problem.	L3	3
11	Implement the non-parametric Locally Weighted Regression algorithm in order to fit data points. Select appropriate data set for your experiment and draw graphs.	L3	3

Course Outcomes:

CO1	Understand the implementation procedures for the machine learning algorithms.
CO2	Design Java/Python programs for various Learning algorithms.
CO3	Apply appropriate data sets to the Machine Learning algorithms.
CO4	Identify and apply Machine Learning algorithms to solve real world problems.
CO5	Perform statistical analysis of machine learning techniques.

Reference Books:

1	Tom M. Mitchell, Machine Learning, India Edition 2013, McGraw Hill Education.
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CIE Assessment:

Regular Lab work :20

Record writing :5

Lab Tests(Minimum 2 tests shall be conducted for 15 marks and average of two will be taken)

Viva 10 marks

SEE Assessment:

Examinations will be conducted for 100 marks and scaled-down to 50. The weightage shall be,

- i. Writeup : 20 marks
- ii. Conduction : 40 marks
- iii. Analysis of results : 20 marks
- iv. Viva : 20

CO-PO/PSO Mapping

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	1	1	-	-	-	-	-	-	2	-	1	2	-
CO2	2	1	1	-	-	-	-	-	-	2	-	1	1	3
CO3	2	1	1	-	-	-	-	-	-	2	-	1	1	2
CO4	2	1	1	-	-	-	-	-	-	2	-	1	1	1
CO5	2	1	1	-	-	-	-	-	-	2	-	1	1	3

High-3, Medium-2, Low-1

Course Title	COMMUNICATION NETWORK LAB	Semester	05
Course Code	MVJ20AML57	CIE	50
Total No. of Contact Hours	30	SEE	50

No. of Contact Hours/week	3(L : T : P :: 0 : 2 : 2)	Total	100
Credits	2	Exam. Duration	3 Hours

Course objective is to: *This course will enable students to*

- Learn and use network commands.
- Learn socket programming.
- Implement and analyze various network protocols.
- Learn and use simulation tools.
- Use simulation tools to analyze the performance of various network protocols.

S No	Experiment Name	RBT Level	Hours
1	Learn to use commands like tcpdump, netstat, ifconfig, nslookup and traceroute. Capture ping and traceroute PDUs using a network protocol analyzer and examine.	L3	3
2	Write a program for error detecting code using CRC-CCITT (16- bits).	L3	3
3	Write a program to find the shortest path between vertices using bellman-ford algorithm.	L3	3
4	Applications using TCP sockets like: a) Echo client and echo server b) Chat c) File Transfer	L3	3
5	Simulation of DNS using UDP sockets.	L3	3
6	Write a code for simulating ARP /RARP protocols.	L3	3
7	Implementation of Stop and Wait Protocol and Sliding Window Protocol.	L3	3
8	Write a program for congestion control using leaky bucket algorithm.	L3	3
9	Simulate the transmission of ping messages/trace route over a network topology consisting of 6 nodes and find the number of packets dropped due to congestion.	L3	3
10	Simulate an Ethernet LAN using n nodes and set multiple traffic nodes and plot congestion window for different source / destination.	L3	3
11	Simulate simple ESS and with transmitting nodes in wireless LAN by simulation and determine the performance with respect to transmission of packets.	L3	3
12	Simulate and study the performance of GSM on NS2/NS3 (Using MAC layer) or equivalent environment.	L3	3
13	Simulate and study the performance of CDMA on NS2/NS3 (Using stack called Call net) or equivalent environment	L3	3
14	Simulate and study the performance of LTE on NS2/NS3	L3	3

Web Link and Video Lectures: (Self Learning)

- <https://www.youtube.com/watch?v=rurs7cdT5cc>
- <https://www.youtube.com/watch?v=jQerVWxOGMc>
- <https://www.youtube.com/watch?v=X-wAtdGS5No>
- <https://www.youtube.com/watch?v=Db-tV8JJ3ZQ>
- <https://www.youtube.com/watch?v=Yb7vcX0inbM>

Course Outcomes:

CO1	Implement various protocols using TCP and UDP.
CO2	Compare the performance of different transport layer protocols.
CO3	Use simulation tools to analyze the performance of various network protocols.
CO4	Analyze various routing algorithms
CO5	Implement error correction codes.

Reference Books:

1	Larry L. Peterson, Bruce S. Davie, Computer Networks: A Systems Approach, Fifth Edition, Morgan Kaufmann Publishers Inc., 2012.
2	William Stallings, Data and Computer Communications, Tenth Edition, Pearson Education, 2013.

CIE Assessment:

Regular Lab work :20

Record writing :5

Lab Tests(Minimum 2 tests shall be conducted for 15 marks and average of two will be taken)

Viva 10 marks

SEE Assessment:

Examinations will be conducted for 100 marks and scaled-down to 50. The weightage shall be,

- Writeup : 20 marks
- Conduction : 40 marks
- Analysis of results : 20 marks
- Viva : 20

CO-PO/PSO Mapping

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3	2	1	-	-	-	-	-	-	-	1	3
CO2	3	3	2	2	1	-	-	-	-	-	1	-	-	-
CO3	3	3	2	2	1	-	-	-	-	-	1	-	3	-
CO4	3	3	2	2	1	-	-	-	-	-	1	-	3	-
CO5	3	2	2	2	1	-	-	-	-	-	-	-	1	3

High-3, Medium-2, Low-1

Course Title	WEB TECHNOLOGIES LABORATORY	Semester	05
Course Code	MVJ20AML58	CIE	50
Total No. of Contact Hours	30	SEE	50
No. of Contact Hours/week	3(L : T : P :: 0 : 2 : 2)	Total	100
Credits	2	Exam. Duration	3 Hours

Course objective is to:

This course will enable students to get practical experience in design, develop, implement, analyze and evaluation of

- Web pages and Style sheet creation.
- Client side programming and Java script
- PHP and Database creation.

S No	Experiment Name	RBT Level	Hours
1	Create a web page with the following. a. Cascading style sheets. b. Embedded style sheets. c. Inline style sheets. Use our college information(Department of CSE) for the web pages.	L3	3
2	Design HTML form for keeping student record and validate it using Java sc	L3	3
3	Write an HTML program to design an entry form of student details and se to store at database server like SQL, Oracle or MS Access.	L3	3
4	Write a JavaScript code that displays text “TEXT-GROWING” with increa font size in the interval of 100ms in RED COLOR, when the font size rea 50pt it displays “TEXT-SHRINKING” in BLUE color. Then the font decreases to 5pt.	L3	3
5	Assume four users user1, user2, user3 and user4 having the passwords p pwd2, pwd3 and pwd4 respectively. Write a servlet for doing the following. 1. Create a Cookie and add these four user id’s and passwords to this Cook 2. Read the user id and passwords entered in the Login form and authent with the values available in the cookies.	L3	3
6	Write a JSP which insert the details of the 3 or 4 users who register with web site by using registration form. Authenticate the user when he submit login form using the user name and password from the database.	L3	3
7	Validate the form using PHP regular expression. PHP stores a form data database	L3	3

8	Write a PHP program to display a digital clock which displays the current of the server.	L3	3
9	Creating simple application to access data base using JDBC Formatting HTML with CSS.	L3	3
10	Write a Program for manipulating Databases and SQL with real application	L3	3

Course Outcomes:

CO1	Construct Web pages using HTML/XML and style sheets.
CO2	Build dynamic web pages with validation using Java Script objects and by applying different event handling mechanisms.
CO3	Develop dynamic web pages using server side scripting.
CO4	Use PHP programming to develop web applications
CO5	Use JDBC and SQL to develop web applications

Reference Books:

1	Jeffrey C and Jackson, —Web Technologies A Computer Science Perspective, Pearson Education, 2011.
2	UttamK.Roy, —Web Technologies, Oxford University Press, 2011

CIE Assessment:

Regular Lab work :20
Record writing :5
Lab Tests(Minimum 2 tests shall be conducted for 15 marks and average of two will be taken)
Viva 10 marks

SEE Assessment:

Examinations will be conducted for 100 marks and scaled-down to 50. The weightage shall be,

- i. Writeup : 20 marks
- ii. Conduction : 40 marks
- iii. Analysis of results : 20 marks
- iv. Viva : 20

CO-PO/PSO Mapping

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
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CO1	3	3	2	-	3	3	-	-	3	-	3	2	1	-
CO2	3	3	2	-	3	3	-	-	3	-	3	2	1	2
CO3	3	3	2	-	3	3	-	-	3	-	3	2	1	2
CO4	3	3	2	-	3	3	-	-	3	-	3	2	1	3
CO5	3	3	2	-	3	3	-	-	3	-	3	2	2	3

High-3, Medium-2, Low-1

Course Title	ENVIRONMENTAL STUDIES	Semester	05
Course Code	MVJ20ENV59	CIE	50
Total No. of Contact Hours	20	SEE	50
No. of Contact Hours/week	1 (L: T: P 1 : 0 :0)	Total	100
Credits	1	Exam. Duration	3 Hrs.

Course objective is to: This course will enable the students to

- Relate to interdisciplinary approach to complex environmental problems using basic tools of the natural and social sciences including geo-systems, biology, chemistry, economics, political science and international processes; Study drinking water quality standards and to illustrate qualitative analysis of water.
- Critically evaluate the science and policy ramifications of diverse energy portfolios on air and water quality, climate, weapons proliferation and societal stability.

Prerequisites: *Basic Science*

Module-1	L1, L2	4 Hrs
Introduction to environmental studies, Multidisciplinary nature of environmental studies; Scope and importance; Concept of sustainability and sustainable development. Ecosystems (Structure and Function): Forest, Desert, Rivers, Ocean Biodiversity: Types, Hot spots; Threats and Conservation of biodiversity, Deforestation. Video link: <ul style="list-style-type: none">• https://nptel.ac.in/courses/127/106/127106004/		
Module-2	L1,L2	4 Hrs.
Advances in Energy Systems (Merits, Demerits, Global Status and Applications): Hydrogen, Solar, OTEC, Tidal and Wind. Natural Resource Management (Concept and case-study): Disaster Management, Sustainable Mining, Cloud Seeding, and Carbon Trading. Video link: <ul style="list-style-type: none">• https://nptel.ac.in/courses/121/106/121106014/		
Module-3	L1	4 Hrs.

Environmental Pollution (Sources, Impacts, Corrective and Preventive measures, Relevant Environmental Acts, Case-studies): Surface and Ground Water Pollution; Noise pollution; Soil Pollution and Air Pollution.

Waste Management & Public Health Aspects: Bio-medical Waste; Solid waste; Hazardous waste; E-waste.

Video link:

- <https://nptel.ac.in/courses/122/106/122106030/>
- <https://nptel.ac.in/courses/105/103/105103205/>
- <https://nptel.ac.in/courses/120/108/120108005/>
- <https://nptel.ac.in/courses/105/105/105105160/>

Module-4	L1,	4 Hrs.
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Global Environmental Concerns (Concept, policies, and case-studies): Global Warming Climate Change; Acid Rain; Ozone Depletion; Fluoride problem in drinking water.

Video link:

- <https://nptel.ac.in/courses/122/106/122106030/>
- <https://nptel.ac.in/courses/120108004/>
- https://onlinecourses.nptel.ac.in/noc19_ge23/preview

Module-5	L1,L2	4 Hrs.
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Latest Developments in Environmental Pollution Mitigation Tools (Concept and Applications): G.I.S. & Remote Sensing, Environment Impact Assessment, Environmental Management Systems, ISO 14001.

Video link:

- <https://nptel.ac.in/courses/105/102/105102015/>
- <https://nptel.ac.in/courses/120/108/120108004/>

Course Outcomes: On completion of the course, students would be able to

CO1	Describe the principles of ecology and environmental issues that apply to air, land, and water issues on a global scale.
CO2	Develop critical thinking and/or observation skills, and apply them to the analysis of a problem or question related to the environment.
CO3	Demonstrate ecology knowledge of a complex relationship between biotic and Abiotic components.
CO4	Apply their ecological knowledge to illustrate and graph a problem and describe the realities that managers face when dealing with complex issues.

Reference Books:

1.	Principals of Environmental Science and Engineering, Raman Siva kumar, Cengage learning, Singapur, 2 nd Edition, 2005
2.	Environmental Science – working with the Earth G.Tyler Miller Jr. Thomson Brooks /Cole, 11 th Edition, 2006
3.	Textbook of Environmental and Ecology, Pratiba Singh, Anoop Singh & Piyush Malaviya , ACME Learning Pvt. Ltd. New Delhi, 1 st Edition.

CIE Assessment:

CIE is based on quizzes, tests, assignments/seminars and any other form of evaluation. Generally, there will be: Three Internal Assessment (IA) tests during the semester (30 marks each), the final IA marks to be awarded will be the average of three tests

- Quizzes/mini tests (4 marks)
- Mini Project / Case Studies (8 Marks)
- Activities/Experimentations related to courses (8 Marks)

SEE Assessment:

- i. Question paper for the SEE consists two parts i.e. Part A and Part B. Part A is compulsory and consists of objective type or short answer type questions of 1 or 2 marks each for total of 20 marks covering the whole syllabus.
- ii. Part B also covers the entire syllabus consisting of five questions having choices and may contain sub-divisions, each carrying 16 marks. Students have to answer five full questions.
- iii. One question must be set from each unit. The duration of examination is 3 hours.

CO-PO Mapping

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	1	-	2	2	1	1	-	2	1
CO2	3	3	2	1	-	1	2	-	1	1	2	1
CO3	3	3	2	1	-	2	2	-	1	1	2	1
CO4	3	3	2	2	-	2	2	-	1	1	2	1

High-3, Medium-2, Low-1

Course Title	UNIVERSAL HUMAN VALUES II -UNDERSTANDING HARMONY AND ETHICAL HUMAN CONDUCT	Semester	05
Course Code	MVJ20UHV510	CIE	50
Total No. of Contact Hours	30	SEE	50
No. of Contact Hours/week	2(L:T:P :: 16:14:0)	Total	100
Credits	2	Exam. Duration	3 Hrs.

Course objective is to: *This course will enable the students to*

- Appreciate the essential complementarity between 'VALUES' and 'SKILLS' to ensure sustained happiness and prosperity which are the core aspirations of all human beings.
- Facilitate the development of a Holistic perspective among students towards life and profession as well as towards happiness and prosperity based on a correct understanding of the Human reality and the rest of existence. Such a holistic perspective forms the basis of Universal Human Values and movement towards value-based living in a natural way.
- Highlight plausible implications of such a Holistic understanding in terms of ethical human conduct, trustful and mutually fulfilling human behavior and mutually enriching interaction with Nature.

Prerequisites: *Universal Human Values I*

Module-1

L1,L2

6 Hrs

Review on Right Understanding, Relationship and Physical Facility (Holistic Development and the Role of Education), Self-exploration as the Process for Value Education, Happiness and Prosperity – Current Scenario,

Value Education: Understanding Value Education, Continuous Happiness and Prosperity – the Basic Human Aspirations, , Method to Fulfill the Basic Human Aspirations,

Practical Sessions: Sharing about Oneself (Tutorial 1), Exploring Human Consciousness (Tutorial 2), Exploring Natural Acceptance (Tutorial 3)

Video link:

- <https://www.youtube.com/watch?v=85XCw8SU084>
- https://www.youtube.com/watch?v=E1STJoXCXUU&list=PLWDeKF97v9SP_Kt6jqzA3pZ3yA7g_OAQz
- https://www.youtube.com/channel/UCQxWr5QB_eZUnwxSwxXEkQw

Module-2

L1,L2

6 Hrs

Review on Understanding Human being as the Co-existence of the Self and the Body, The Body as an Instrument of the Self, Harmony of the Self with the Body.

Harmony in the Human Being: Distinguishing between the Needs of the Self and the Body, Understanding Harmony in the Self, Programme to ensure self-regulation and Health.

Practical Sessions: Exploring the difference of Needs of Self and Body (Tutorial 4), Exploring Sources of Imagination in the Self (Tutorial 5), Exploring Harmony of Self with the Body (Tutorial 6).

Video link:

- <https://www.youtube.com/watch?v=GpuZo495F24>
- https://www.youtube.com/channel/UCQxWr5QB_eZUnwxSwxXEkQw

Module-3

L1,L2

6 Hrs

Review on Harmony in the Family – the Basic Unit of Human Interaction, Other Feelings, Justice in Human-to-Human Relationship, Understanding Harmony in the Society.

Harmony in the Family and Society: Trust' – the Foundational Value in Relationship, 'Respect' – as the Right Evaluation, Vision for the Universal Human Order,

Practical Sessions: Exploring the Feeling of Trust (Tutorial 7), Exploring the Feeling of Respect (Tutorial 8), Exploring Systems to fulfill Human Goal (Tutorial 9).

Video link:

- <https://www.youtube.com/watch?v=F2KVV4WNnS8>
- https://www.youtube.com/channel/UCQxWr5QB_eZUnwxSwxXEkQw

Module-4

L1,L2

6 Hrs

Harmony in the Nature/Existence: Understanding Harmony in the Nature, Interconnectedness, self-regulation and Mutual Fulfillment among the Four Orders of Nature, Realizing Existence as Co-existence at All Levels, The Holistic Perception of Harmony in Existence.

Practical Sessions: Exploring the Four Orders of Nature (Tutorial 10), Exploring Co-existence in Existence (Tutorial 11).

Video link:

- <https://www.youtube.com/watch?v=1HR-QB2mCF0>
- <https://www.youtube.com/watch?v=lfN8q0xUSpw>
- https://www.youtube.com/channel/UCQxWr5QB_eZUnwxSwxXEkQw

Module-5

L1,L2

6 Hrs

Review on Natural Acceptance of Human Values,Basis for Humanistic Education, Humanistic Constitution and Universal Human Order, Holistic Technologies, Production Systems and Management Models-Typical Case Studies.

Implications of the Holistic Understanding – a Look at Professional Ethics: Definitiveness of (Ethical) Human Conduct, Competence in Professional Ethics, Strategies for Transition towards Value-based Life and

Profession

Practical Sessions: Exploring Ethical Human Conduct (Tutorial 12), Exploring Humanistic Models in Education (Tutorial 13), Exploring Steps of Transition towards Universal Human Order (Tutorial 14).

Video link:

- <https://www.youtube.com/watch?v=BikdYub6RY0>
- https://www.youtube.com/channel/UCQxWr5QB_eZUnwxSwxXEkQw

Course Outcomes: On completion of the course, students would be able to

CO1	Explore themselves, get comfortable with each other and with the teacher
CO2	Enlist their desires and the desires are not vague.
CO3	Restate that the natural acceptance (intention) is always for living in harmony, only competence is lacking
CO4	Differentiate between the characteristics and activities of different orders and study the mutual fulfillment among them
CO5	Present sustainable solutions to the problems in society and nature

Text Books:

1.	AICTE SIP UHV-I Teaching Material, https://fdp-si.aicte india.org/AicteSipUHV_download.php
2.	A Foundation Course in Human Values and Professional Ethics, R R Gaur, R Asthana, G P Bagaria, 2nd Revised Edition, Excel Books, New Delhi, 2019. ISBN 978-93-87034-47-1
3.	Teachers' Manual for A Foundation Course in Human Values and Professional Ethics, R R Gaur, R Asthana, G P Bagaria, 2nd Revised Edition, Excel Books, New Delhi, 2019. ISBN 978-93-87034-53-2

Reference Books:

1.	Human Values and Professional Ethics by R R Gaur, R Sangal, G P Bagaria, Excel Books, New Delhi, 2010
2.	Jeevan Vidya: Ek Parichaya, A Nagaraj, Jeevan Vidya Prakashan, Amarkantak, 1999.
3.	Human Values, A.N. Tripathi, New Age Intl. Publishers, New Delhi, 2004.
4.	The Story of Stuff (Book).
5.	The Story of My Experiments with Truth - by Mohandas Karamchand Gandhi

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CO3	-	1	-	-	-	2	2	3	2	1	2	1	1	2
CO4	-	1	-	-	-	2	2	3	2	1	2	1	1	3
CO5	-	1	-	-	-	2	2	3	2	1	2	1	2	3

High-3, Medium-2, Low-1